

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of forming a structure attached to a micro-fluidic channel,
comprising:
introducing a solidifiable fluid into a micro-fluidic channel
wherein the solidifiable fluid comprises a binding material;
introducing a focusing fluid into the micro-fluidic channel;
hydrodynamically focusing the solidifiable fluid using the focusing fluid; and
solidifying a portion of the hydrodynamically focused solidifiable fluid by selectively exposing the portion to an electromagnetic radiation; and
forming a structure wherein the structure is a biocompatible coating, an internal divider wall, or a pillar,
wherein forming the structure comprises forming a coating attached to a wall of the micro-fluidic channel.

2. (Currently amended) The method of claim 1, wherein the solidifying step comprises solidifying the hydrodynamically focused solidifiable fluid inside the micro-fluidic channel.

3. (Previously Presented) The method of claim 2, wherein the solidifying step comprises polymerizing the hydrodynamically focused solidifiable fluid by heat rather than the electromagnetic radiation.

4. (Previously Presented) The method of claim 3, wherein the electromagnetic radiation comprises an ultraviolet radiation.

5-6. (Canceled)

7. (Currently amended) The method of claim 1, wherein forming the coating comprises forming a coating having a greater compatibility than that of the wall of the micro-fluidic channel.

8. (Currently amended) The method of claim 7, wherein forming the coating having the greater compatibility comprises forming a coating having a greater biocompatibility than that of the wall of the micro-fluidic channel.

9. (Currently amended) A method of forming a structure attached to a micro-fluidic channel,

comprising:

introducing a solidifiable fluid into a micro-fluidic channel;

wherein the solidifiable fluid comprises a biocompatible material;

introducing a focusing fluid into the micro-fluidic channel;

hydrodynamically focusing the solidifiable fluid using the focusing fluid;

solidifying a portion of the hydrodynamically focused solidifiable fluid by selectively exposing the portion to an electromagnetic radiation; and

forming a biocompatible anti-fouling coating attached to a wall of the micro-fluidic channel having a greater biocompatibility than that of the wall of the micro-fluidic channel,

wherein the solidifiable fluid comprises an anti-fouling.

10. (Currently amended) The method of claim 9, further comprising flowing a fluid containing a biological molecule in the micro-fluidic channel containing the biocompatible anti-fouling coating.

11. (Canceled)

12. (Currently amended) The method of claim 8, further comprising:

flowing a fluid containing a biological molecule in the micro-fluidic channel containing the biocompatible coating; and

binding the biological molecule to the binding material of the biocompatible coating.

13. (Previously Presented) The method of claim 1, wherein forming the structure comprises forming an internal divider wall.

14. (Original) The method of claim 13, further comprising tailoring a permeability of the divider wall to a molecule.

15. (Original) The method of claim 14, further comprising performing a separation by permeating the molecule across the internal divider wall.

16. (Canceled)

17. (Previously Presented) The method of claim 1, wherein forming the structure comprises forming a pillar having a width that is based on hydrodynamic focusing and a length that is defined by a patterned mask.

18. (Canceled).

19. (Currently amended) A method of forming a structure attached to a micro-fluidic channel comprising:

introducing a solidifiable fluid and a focusing fluid into a hydrodynamic focusing system having a micro-fluidic channel,

wherein the solidifiable fluid comprises biocompatible nanoparticles;

hydrodynamically focusing the solidifiable fluid with the focusing fluid within the micro-fluidic channel; and

solidifying a portion of the hydrodynamically focused solidifiable fluid by selectively exposing the portion to an electromagnetic radiation to form a structure; wherein the structure is a coating or an internal divider wall, and forming the structure comprises forming a plurality of coatings attached to walls of the micro-fluidic channel.

20-23. (Canceled).

24. (Previously Presented) The method of claim 19, wherein forming the structure comprises forming an internal divider wall.

25. (Previously Presented) The method of claim 24, further comprising performing a separation by permeating a molecule across the internal divider wall.

26-33. (Canceled).

34. (Currently amended) The method of claim 19, wherein the solidifying step comprises polymerizing the solidifiable fluid inside the micro-fluidic channel.

35. (New) The method of claim 1, wherein a first coating is adjacent to and abuts a first wall and a second coating is adjacent to and abuts a second wall.

36. (New) The method of claim 19, wherein a first coating is adjacent to and abuts a first wall and a second coating is adjacent to and abuts a second wall.